Remarks

Claims 1-5, 7-57, 73, 75-81, 83-96 and 98-121 are pending.

Claims 15, 22-57, 73, 75-81, 83-96, 101, 102, 107-111 and 113-121 have been withdrawn by the Examiner.

Claims 1-5, 7-14, 16-21, 98-100, 103-106 and 112 are currently under consideration.

The claims have been amended to clarify that a *continuous layer* of silicon is formed over the dielectric material, and the silicon layer is *nitridized* to form a silicon nitride barrier layer effective to inhibit passage of a dopant into the underlying dielectric material. Support for the amendments is throughout the published application, for example, at paragraph [0025] ("...gate oxide layer 14 is irradiated with a silicon-containing species ...to deposit (nucleate) *a thin layer 18* of silicon onto the surface 16 of the gate oxide layer 14, as shown in FIG. 2...") and in Fig. 2.

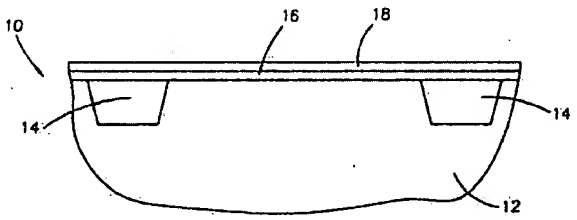

FIG.2

The amendments to the claims are merely to clarify language used in the claims and/or the subject matter claimed. The scope of the claims is intended to be the same as before the amendment. No new matter has been added.

Rejection of Claims under 35 U.S.C. § 102(e)/103(a)

The Examiner rejected Claims 1-5, 7-14, 16-19, 98-100, 103-104, 106 and 112 under Section 102(e) as anticipated by Muralidhar (USP 6,297,095). The Examiner maintains that Muralidhar discloses each of the elements of the claims, citing particularly to *Figs. 23 and 25.*

The Examiner also rejected Claims 20-21 and 105 under Section 103(a) as obvious over Muralidhar. These rejections are respectfully traversed.

Muralidhar does not teach or suggest forming a *continuous* silicon layer over a dielectric layer and *nitridizing* the silicon layer to form *continuous* silicon nitride barrier layer, which is effective to present passage of dopant into the dielectric layer.

Fig. 23 illustrates nanoclusters of silicon **104** that are encapsulated in an encapsulation layer **106**. As illustrated, the silicon nanoclusters **104** are *spaced apart* with portions of the dielectric layer **102** is *exposed*. See at col. 16, lines 19-25 (emphasis added).

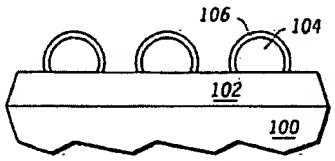

FIG.23

...**FIG. 23** illustrates the nanocluster structures of FIG. 22 following an encapsulation step. The encapsulation step forms an encapsulation layer **106** *on each* of the nanoclusters **104**...

Fig. 25 illustrates formation of a dielectric layer overlying a "plurality of nanoclusters." (See at cols. 4-5, bridging sentence, and at col. 17, lines 13-16; emphasis added).

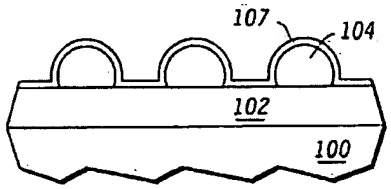

FIG.25

FIG. 25 illustrates...formation of a thin dielectric layer overlying *the plurality of nanoclusters*...

...

In other embodiments, a protecting nitride layer may be deposited *rather than grown* on individual nanoclusters. **FIG. 25** illustrates the ***nanocluster structures*** as shown in FIG. 22 following a step where a thin nitride layer **107** is *deposited*...

Muralidhar does *not* teach or suggest forming a *continuous* silicon layer as in Applicant's method as claimed. Rather, Muralidhar particularly teaches that the silicon nanoclusters **104** are *isolated* and *spaced apart* (to avoid lateral charge transfer) – and do *not* form a *continuous* silicon layer. See at col. 12, lines 57-67 (emphasis added)

...the ***coverage, or area density of the nanoclusters on the underlying tunnel dielectric layer*** may be approximately **20%**. ***The 20% area density*** is reasonable for semiconductor device manufacturing, as it provides a level of tolerance ***in the spacing between the nanoclusters*** included in the floating gate structures. Although higher area densities may be achieved, *the proximity of the isolated storage elements in such higher area density embodiments may increase the probability of lateral charge transfer between nanoclusters, thus degrading the beneficial effects of their* ***isolation***.

Furthermore, the nitride layer **107** in **Fig. 25** is *not* formed by nitridizing silicon as required by the claims. Rather, the nitride layer **107** in **Fig. 25** is *deposited* rather than grown on silicon – using a CVD process. See at col. 17, lines 13-27 (emphasis added).

> In other embodiments, a protecting *nitride layer may be deposited rather than grown* on individual nanoclusters. **FIG. 25** illustrates the nanocluster structures as shown in FIG. 22 following a step *where a thin nitride layer 107 is deposited*. The nitride layer **107** may be *deposited* using CVD operations that utilize ammonia and dichlorosilane...

Muralidhar does not teach or suggest Applicant's methods as claimed. Accordingly, withdrawal of this rejection is respectfully requested.

Extension of Term.

The proceedings herein are for a patent application and the provisions of 37 CFR § 1.136 apply. Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that Applicant has inadvertently overlooked the need for a petition for extension of time. If any extension and/or fee are required, please charge Account No. 23-2053.

It is submitted that the present claims are in condition for allowance, and notification to that effect is respectfully requested.

Respectfully submitted,

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